**Problems with Lines**  Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Rodriguez/Geometry Honors**

All of these are to be done in your notebook and neatly presented (no credit for messy work, and no credit if you submit completed work on this sheet). Pencil only.

**Set #1**

1. Draw the graph of each line (accurately and on a grid):

a) y = 3x + 4 b) y = -5/3 x + 2 c) y = 1/2 x – 1

2. Write an equation in y = ax + b form that contains the points (-4, 4) and (2, 10).

3. Write an equation for the horizontal line that passes through (3, -2).

4. Write an equation for the vertical line that passes through (6, 4).

5. How come a line with no slope is not the same as a line with a slope of 0?

(Note: you’ll need to discuss this in terms of rates of change.)

6. Find the slope of the x-axis and the y-axis.

7. Graph three different lines that have a y-intercept of (0, 2). Then, describe how the equations of the lines are alike and how they are different.

8. Where do the lines y = 5 and x = 4 intersect?

9. Write equations for three different lines that pass through the point (5, 6).

10. Write an equation for a line with an x-intercept of (2, 0) and y-intercept of (0, 4).

11. Determine whether (5, -4), (2, 3), and (-1, 10) lie on the same line.

12. A triangle’s vertices are at A(0, 0), B(2, 5), and C(4, 0).

a) Write an equation for side AB *and* for side BC.

c) Compare the slopes and y-intercepts of the equations in a) and b).

**Set #2**

1. Create lines AB and CD using the given points. Then, determine whether the two lines are parallel, perpendicular, or neither.

a) A(-1, 1.5), B(-1, 2), C(3, 7), D(3, -1) b) A(-3, 2), B(5, 1), C(2, 7), D(1, -1)

2. Write an equation for the line that passes through (4, 4) and is perpendicular to the line y + 2x + 8 = 0.

3. Write an equation for the line that is parallel to 3x + 2y – 8 = 4 and contains the

point (6, -2).

4. Determine whether each set of lines is perpendicular, and then explain your decision.

a) y = –x – 7; y – x = 20 b) x = -2; y = 3 c) 2x – 7y = -42; 4y = -7x – 2

5. Write equations for two perpendicular lines that have the same y-intercept and do not pass through the origin.

6. Determine whether the y-intercepts of two parallel lines can be the same.

7. Write the equation of a line that is parallel to 4x + 2y + 8 = 0 and has the same

y-intercept as -3y = -2x – 9.

8. Write the equation of a line that is parallel to y = -4 and passes through (3, 7).

9. Find the equation of a line that is parallel to 2x − 4y = 7 and has a y-intercept of 4.

10. Find the equation of a line that is perpendicular to 6*y* − 3x − 2 = 0 and goes through the point (4, -3).

11. Two perpendicular lines intersect at (1, 2). The first line also passes through (5, 10). Find the coordinates of another point on the second line.

12. Line h goes through (2, 4) and (6, -2).

a) Find two points on that line other than those two.

b) Find two points that would be on a line parallel to line h.

**Set #3**

1. If the line through (8, C) and (6, 4) is parallel to the line through (6, 8) and (12, 18), then what is the value of C?

2. The function Slope(m) inputs an equation of a line, m, and outputs the slope of the line.

a) Find Slope(3x + 7y = 21).

b) Make up an equation for a line such that Slope(m) = .

c) Find an input that works for Slope(m) = 4.

3. The slope of the line 2x + 5y = 10 added to the slope of the line kx + 8y = 23 is zero. Find k.

4. Point B’s y-coordinate is 2 more than its x-coordinate. The slope of the line from the origin to point B is 1.125. Find the coordinates of point B.

5. Use slope to explain why each theorem is true for three lines in the coordinate plane.

a) If two lines are parallel to the same line, then they are parallel to each other.

b) In a plane, if two lines are perpendicular to the same line, then they are parallel to each other.